Approved for use through 7/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE collection of information unless it displays a valid OMB control number

	Substitute f	or form 1449/	√ PTO		Comple	te if Known
	OFE		N DICCL	CUDE	APPLICATION NUMBER	10/645,306
Λ	77391 77391	ORMATIO TEMENT	DA YDDI M DIQCEI	JOURE	FILING DATE	08/21/2003
70	MAR 2 8 2005	LIEMENI	DI APPL	.ICAN I	FIRST NAMED INVENTOR	Choi et al.
$\langle \cdot $. Edu	se as many she	ets as necessa	ny)	Group Art Unit	1763 1732
1	77 SHEET	1	of	16	Examiner Name	Unassigned TENTONI
			1		Attorney Docket Number	P86-28-03

				U.S. PATENT DOCUMEN	TS	
Examiner Initials*	Cite No.1	U.S. Patent Doo Number	curnent Kind Code ² (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
			,	Y		
LBT	B1	6,234,379	B1	Donges	5/22/2001	
	B2	6,309,580	B1	Chou	10/30/2001	
	В3	6,391,217	B2	Schaffer et al.	5/21/2002	
	B4	6,696,220	B2	Bailey et al.	2/24/2004	\
	B5	2004/0007799	A1	Choi et al.	1/15/2004	
	В6	2004/0021254	A1	Sreenivasan et al.	2/5/2004	
	В7	2004/0021866	A1	Watts et al.	2/5/2004	1-
	B8	2004/0022888	A1	Sreenivasan et al.	2/5/2004	
	В9	2002/0177319	A1	Chou	11/28/2002	
	B10	6,713,238	B1	Chou et al.	3/30/2004	
	B11	2004/0008334	A1	Sreenivasan et al.	1/15/2004	
	B12	2004/0009673	A1	Sreenivasan et al.	1/15/2004	
	B13	2004/0124566	A1	Sreenivasan et al.	7/1/2004	
	B14	6,646,662	B1	Nebashi et al.	11/11/2003	
	B15	6,776,094	B1	Whitesides et al.	8/17/2004	
	B16	6,518,189	B1	Chou	2/11/2003	
V	B17	2002/0132482	A1	Chou	9/19/2002	
LB'T	B18	2002/0167117	A1	Chou	11/14/2002	

Examiner		Date	
Signature	LEO B. TENTONI	Considered	08/02/2005

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending on the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number Substitute for form 1449A/PTO Complete if Known **APPLICATION NUMBER** 10/645,306 INFORMATION DISCLOSURE 08/21/2003 FILING DATE STATEMENT BY APPLICANT FIRST NAMED Choi et al. **INVENTOR** Group Art Unit 1763 1732 (use as many sheets as necessary) **Examiner Name** Unassigned TENTONI Sheet 6 Attorney Docket Number P86-28-03

				U.S. PATENT DOCUMEN	TS	
Examiner Initials*	Cite No.1	U.S. Patent Do	cument Kind Code ² (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Cotumns, Lines, Where Relevant Passages or Relevant Figures Appear
LBT	B19	6,482,742	B1	Chou	11/19/2002	
<u> </u>	B20	2003/0080471	A1	Chou	5/1/2003	
	B21	2004/0036201	A1	Chou et al.	2/26/2004	
	B22	2004/0192041	A1	Jeong et al.	9/30/2004	-
	B23	6,753,131	B1	Rogers et al.	6/22/2004	
	B24	6,828,244	B2	Chou	12/7/2004	
	B25	6,809,356	B2	Chou	10/26/2004	
	B26	2004/0197843	A1	Chou et al.	10/7/2004	
	B27	2004/0156108	A1	Chou et al.	8/12/2004	
	B28	2004/0137734	A1	Chou et al.	7/15/2004	
	B29	2004/0131718	A1	Chou et al.	7/8/2004	
	B30	2004/0118809	A1	Chou et al.	6/24/2004	
	B31	2004/0046288	A1	Chou	3/11/2004	
	B32	2003/0080472	A1	Chou	5/1/2003	
	B33	2003/0034329	A1	Chou	2/20/2003	
	B34	2002/0042027	A1	Chou et al.	4/11/2002	
V	B35	2004/0170771	A1	Bailey et al.	9/2/2004	
LBT	B36	6,580,172	B2	Mancini et al.	6/17/2003	
Evaminer					Date	

Examiner			Date	
Signature	LEO	B. TENTONI	Considered	08/02/2005

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ³ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁴ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending on the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

PTO/SB/08A (08-03)

Approved for use through 7/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE Ander the Proposed Paduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMR control number

Substitute	for form 1449A	/PTO		Comple	te if Known
11.15	ORMATION	i Dicci (SCUDE	APPLICATION NUMBER	10/645,306
	ATEMENT I			FILING DATE	08/21/2003
317	ATEMENT I	DI AFFL	ICAN I	FIRST NAMED INVENTOR	Choi et al.
a	use as many shee	ts as necessa.	ny)	Group Art Unit	1763 1732
Sheet	Sheet 3 of 6	6	Examiner Name	Unassigned TENTONI	
				Attorney Docket Number	P86-28-03

				U.S. PATENT DOCUMEN	TS		_
Examiner Initials*	Cite No. ¹	U.S. Patent Do Number	cument Kind Code ² (if known)	Name of Patentee or Applicant of Cited Document	Cited D	oblication of ocument O-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
							
LOT	937	11/051,533		-Fletcher et el.	2/4/200	5	
LBT	B38	4,512,848		Deckman et al.	4/23/19	85 —	
	B39	6,517,995	B1	Jacobenson et al.	2/11/20	03 —	
	B40	2004/0110856	A1	Young et al.	6/10/20	04 _	
	B41	5,028,366		Harakal et al.	7/2/199	1 -	
	B42	5,601,641		Stephens	2/11/19	97 -	
>	B43	5,849,209		Kindt-Larsen et al.	12/15/1	998 -	
LBT	B44	5,849,222		Jen et al.	12/15/1	998	
Examiner Signature		LEO B.	TENTA	Alcr		Date Considered	08/02/2005

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. Applicant's unique citation designation number (optional). See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending on the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/SB/08A (08-03)

Approved for use through 7/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
collection of information unless it displays a valid OMB control number

Substitute fo	r form 1449A/F	TO		Comple	te if Known
INE		i Disci	OSUBE	APPLICATION NUMBER	10/645,306
•	ORMATION ATEMENT I			FILING DATE	08/21/2003
31/	ALCIMEIAL (JI AFFI	LICANI	FIRST NAMED INVENTOR	Choi et al.
				Group Art Unit	1763 1732
(u	se as many shee	ts as necessa	ary)	Examiner Name	Unassigned TENTONI
Sheet	4	of	6		P86-28-03

					PATENT DOCUMENTS			
Examiner Initials*	Cite No.'	Office	Foreign Patent Docu	ument Kind Code ⁵ (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	τ°
	Τ	· · · · ·	[T		T-
LBT	B45	wo	00/21689	ΑI	Chou et al.	4/20/2000		
	B46	JP	02-92603	Α	Kurikawa et al.	4/3/1990		+
	B47	JP	02-24848	Α	Kamio	1/26/1990		\vdash
	B48	wo	01/47003	Aa	Steiner et al.	6/28/2001		
	B49	wo	02/07199	ΑI	Chou	1/24/2002	·	$ar{\mathbf{I}}$
	B50	wo ·	2004/114016	Aa	Chou et al.	12/29/2004		\vdash
	B51	wo	99/05724	Αı	Chou et al.	2/4/1999		+
	B52	wo	03/010289	Aa	Chou et al.	2/6/2003		
—	B53	wo	03/079416	Al	Chou	9/25/2003		
LBT	B54	wo	03/099536	Al	Chou et al.	12/4/2003		-
Evaminar						Date		

Examiner			Date	
Signature	LEO	B. TENTONI	Considered	08/02/2005

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 1 For Japanese patent documents, the Indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending on the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450.. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

PTO/S8/08A (08-03) Approved for use through 7/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for	form 1449A/I	PTO		Comple	ete if Known
INFO	RMATION	DISCLO	SURE	APPLICATION NUMBER	10/645,306
STAT	TEMENT B	Y APPL	ICANT	FILING DATE	08/21/2003
				FIRST NAMED INVENTOR	Choi et al.
(use	as many sheets	as necessar	y)	Group Art Unit	1763 1732
Sheet	5	of	6	Examiner Name	Unassigned TENTONI
		L		Attorney Docket Number	P86-28-03

UINER PRIO		NON PATENT LITERATURE DOCUMENTS	_
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
LBT	B55	Colburn et al., Step and Flash Imprint Lithography for sub-100 nm Patterning, Proceedings of SPIE Vol. 3997, pp. 453 - 457, 1/1/2000.	-
	B56	Johnson et al., Advances in Step and Flash Imprint Lithography, SPIE Microlithography Conference, 2/23/2003.	-
	B57	Heidari, Nanoimprint Lithography at the 6 in. Wafer Scale, J. Vac. Sci. Technol. B 18(6), pp. 3557 - 3560, 11/1/2000.	-
	B58	Translation of Japanese Patent 02-92603 (APRIL 3, 1990).	-
	859	Translation of Japanese Patent 02-24848 (JANUARY 26, 1990).	
	B60	Chou et al., Ultrafast and Direct Imprint of Nanostructures in Silicon, Nature, Col. 417, (June 2002), pp. 835-837, 6/1/2002,	_
	B61	Chou et al., Nanoimprint Lithography, Journal of Vacuum Science Technolgoy B 14(16), pp. 4129-4133, 11/1/1996.	-
	B62	Colburn et al., Development and Advantages of Step-and-Flash Lithography, Solid State Technology, 7/1/2001,	_
LeT	B63	Colburn et al., Characterization and Modeling of Volumetric and Mechanical Properties for Step and Flash Imprint Lithography Photopolymers, Journal of Vacuum Science Technology. Vol b. 19(6), 11/1/2001.	-

Examiner Signature LEO B. TENTONI	Date Considered	08/02/2005
------------------------------------	--------------------	------------

^{*}Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional).

² Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending on the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450.. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/SB/08A (08-03)

Approved for use through 7/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE collection of information unless it displays a valid OMB control number

Substitute for form 1449A/PTO				Comple	ete if Known
INFO	RMATION	DISCLO	SURE	APPLICATION NUMBER	10/645,306
STAT	EMENT B	Y APPL	ICANT	FILING DATE	08/21/2003
	_		_	FIRST NAMED INVENTOR	Choi et al.
(use	as many sheets	s as necessar	γ)	Group Art Unit	1763 1732
Sheet	6	of	6	Examiner Name	Unassigned TENTON
	<u> </u>	<u></u>		Attorney Docket Number	P86-28-03

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
LBT	B64	Bailey et al., Step and Flash Imprint Lithography: Defect Analysis, Journal of Vacuum Science, B 19(6), pp. 2806-2810, 11/1/2001.	
LBT	B65	Bailey et al., Step and Flash Imprint Lithography: Template Surface Treatment and Defect Analysis, Journal of Vacuum Science, B 18(6), pp. 3572-3577, 11/1/2000.	
LBT	B66	Schneider et al., Stripes of Partially Fluorinated Alkyl Chains: Dipolar Langmuir Monolayers (UNDATED).	

	Examiner Signature	LEO	В.	TENTONI	Date Considered	08/02/2005
_						and the second s

^{*}Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional).
² Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending on the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Ø 004

JUL 2 6 2005

PTO/SB/08A (08-03)

Approved for use through 7/31/2006, OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE Under the Paperwork Reduction Act of 1995, no no

Substitute for form 1449A/PTO				Complete if Known		
	IFORMATIO			APPLICATION NUMBER	10/645,306	
STATEMENT BY APPLICANT (use as many sheets as necessary)				FILING DATE	08/21/2003	
				PIRST NAMED INVENTOR	Choi et al.	
Sheet		-6	12	Group Art Unit	1732	
Sheet 1 of 2		Examiner Name	Tentoni, Leo B.			
				Attorney Docket Number	P86-28-03	

				U.S. PATENT DOCUMEN	TS	
Examine Initials*	ale No.	U.S. Palem D Number	Kind Code ² (if known)	Name of Patentee or Applicant of Cled Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
LB	T C1	5,669,303	1	Maracas et al.	9/23/1997	
	C2	2002/0094496		Choi et al.	7/18/2002	
	CЗ	2004/0250945		Zheng et al.	12/16/2004	
	C4	2005/0037143		Chou et al.	2/17/2005	
业	C5	6,900,881		Sreenivasan et al.	5/31/2005	
LB"	T C6	6,908,861		Sreenivasan et al.	6/21/2005	
	_					
ļ		1	ļ			
·	_		,			
						
			 	·		
i						

Examiner		Date	
Signature	1155	1	
Signature	LEO B. TENTONI	l Considered	08/02/2005
	1 = - 0 : 1 = 1 1 1 1 1		00/02/2005

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through distion if not in conformance and not considered. Include copy of this form with next communication to applicant. Applicant's unique distion designation number (optional). See Kinds Codes of USPTO Patent Documents at www.uspio.gog or MPEP 901.04. Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. If find of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. Applicant is to place a check mark here if English language Translation is attached.

This collection of information is remitted by 37 CER 1.97 and 1.98. The information is remitted to obtain or retain a hencefit by the public which is to file.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending on the Individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450... DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450..

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-788-9199) and select option 2.

Ø 005

MOLECULAR IMPRINTS

JUL 2 6 2005

PTO/SB/08A (08-03) Approved for use through 7/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

Substitute for form 1449A/PTO				Complete if Known		
	FORMATION ATEMENT B			APPLICATION . NUMBER	10/645,306	
			7.011	FILING DATE	08/21/2003	
(use	as many sheets	as necessar	r)	FIRST NAMED INVENTOR	Choi et al.	
				Group Art Unit	1732	
Sheet	2	of	2	Examiner Name	Tentoni, Leo B.	
-				Attorney Docket Number	P86-28-03	

OTHER PRI	OR ART	- NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
LBT	C 7	SHIBUICHI ET AL., Super Water- and Oil-Repellent Surfaces Resulting from Fractal Structure, Journal of Colloid and Interface Science, Vol. 208, no. 1, pp. 287-294 12/1/1998.	-
	C8	APPLICATION NO. 11/126,946, naming Inventors Choi et al., entitled Formation of Discontinuous Films During an Imprint Lithography Process, filed 5/11/2005,	-
\downarrow	C9	APPLICATION NO. 11/127,041, naming Inventors Sreenivasan et al., entitled Step and Repeat Imprint Lithography Processes, filed 5/11/2005	-
LBT	C10	APPLICATION NO. 11/127,060, naming Inventors Sreenivasan et al., entitled Step and Repeat Imprint Lithography Systems, filed 5/11/2005	-

Examiner Signature	LEO B. TENTONI	Date Considered	08/02/2005
TO COLUMN TO THE REAL PROPERTY.		<u> </u>	

*Examinor: Initial If reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant's unique citation designation number (optional). Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The Information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentially is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending on the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, Call 1-800-PTO-9199 (1-800-788-9199) and select option 2.

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Reduction Act of 1995, no persons are required to respond to a collection of information unless it discloses a valid OMB control quarter.

Utter the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control numb

5

stitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet 1 of

spond to a collection of information un	less it displays a valid UMB control number.			
Complete if Known				
Application Number	10/645,306			
Filing Date	08/21/2003			
First Named Inventor	Choi et al.			
Group Art Unit	1763 1732			
Examiner Name	Unassigned TENTONI			
Attorney Docket Number	P86/MII-46-28-03			

U.S. PATENT DOCUMENTS							
Examiner Initials*	Cite No.'	U.S. Patent Do	oument Kind Code ² (<i>il known</i>)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	
LBT	A1	4,267,212		Sakawaki	05-12-1981		
	A2	4,731,155		Napoli et al.	03-15-1988		
	A3	4,959,252		Bonnebat et al.	09-25-1990		
	A4	5,110,514		Soane	05-05-1992		
	A5	5,206,983		Guckel et al.	05-04-1993		
	A6	5,259,926		Kuwabara et al.	11-09-1993		
	A7	5,425,848		Haisma et al.	06-20-1995		
	A8	5,480,047		Tanigawa et al.	01-02-1996		
	A9	5,512,131		Kumar et al.	04-30-1996		
	A10	5,723,176		Keyworth et al.	03-03-1998		
	A11	5,753,014		Van Rijn	05-19-1998	·	
	A12	5,772,905		Chou	06-30-1998		
	A13	5,776,748		Singhvi et al.	07-07-1998		
	A14	5,900,160		Whitesides et al.	05-04-1999		
	A15	5,912,049		Shirley	06-15-1999		
1	A16	5,948,470		Harrison et al.	09-07-1999		
	A17	5,952,127		Yamanaka	09-14-1999		
	A18	6,039,897		Lochhead et al.	03-21-2000		
	A19	6,128,085		Buermann et al.	10-03-2000		
	A20	6,168,845		Fontana, Jr. et al.	01-02-2001		
	A21	6,180,239	1	Whitesides et al.	01-30-2001		
	A22	6,218,316		Marsh	04-17-2001		
	A23	6,316,290	1	Wensel	11-13-2001	-	
	A24	6,334,960	1	Willson et al.	01-01-2002		
<u> </u>	A25 A26	6,355,198		Kim et al.	03-12-2002		
LBT	A20	6,518,168		Clem et al.	02-11-2003		
Examiner Signature	L	EO B	TENTO	NI	Date Considered	08/02/2005	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

¹Unique citation designation number. ²See attached Kinds of U.S. Patent Documents. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁸Applicant is to place a check mark here if English language Translation is attached.

Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
to a collection of information unless it displays a valid OMB country to the country of the country of

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

011061 016	Paperwork Reduction Act of	1000,	no persons are required to re	espono to a consection or information uni	ess it displays a valid ONB condornumber.	
Substitute	for form 1449A/PTO			Complete if Known		
				Application Number	10/645,306	
INFO	RMATION D	ISC	LOSURE	Filing Date	08/21/2003	
STA	TEMENT BY	AP	PLICANT	First Named Inventor	Choi et al.	
				Group Art Unit	1763 1732	
	(use as many sheets	as ne	cessary)	Examiner Name	Unassigned TENTONI	
Sheet	2	of	5	Attorney Docket Number	P86/MII-46-28-03	

					PATENT DOCUMENTS			
Examiner Initials*	Cite No.1	Office ³	Foreign Patent Docume Number*	Kind Code ⁵ (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	7°
LBT	A27	DE	2800476	AI	Lamprecht et al.	07-13-1978		+-
	A28	JP	1-196749	A	Matsumoto et al.	08-08-1989	-	-
	A29	wo	01/53889	AI	Ling et al.	07-26-2001		+
V	A30	wo	01/63361	AI	Heidari et al.	08-30-2001		丰
LBT	A31	wo	01/90816	AI	Heidari	11-29-2001		Ξ
······						·		\downarrow
					-			上
· · · · · · · · · · · · · · · · · · ·					<u> </u>			上
								\perp
						:		╁
								F
	Ī							Ţ
								1
								上
	-							\pm
								\pm
							•	+
								+
								1
								‡
								+

Examiner Signature	LEO B. TE	NTONI	Date Considered	08/02	/2005

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered, include copy of this form with next communication to applicant.

¹Unique citation designation number. ²See attached Kinds of U.S. Patent Documents. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁹Applicant is to place a check mark here if English language Translation is attached.

Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Substitute	for form 1449B/	PTO		Complete if Known		
				Application Number	10/645,306	
INFO	RMATION	DISC	LOSURE	Filing Date	08/21/2003	
STAT	TEMENT E	BY AP	PLICANT	First Named Inventor	Choi et al.	
				Group Art Unit	1783 173a	
(use as many she	eets as ne	cessary)	Examiner Name	Unassigned TENTONI	
Sheet	3	of	5	Attorney Docket Number	P86/MII-46-28-03	

OTHER PRIOR	R ART - I	NON PATENT LITERATURE DOCUMENTS					
Examiner Initials*	Cite No.	No. item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.					
	A32	COWIE, "Polymers: Chemistry and Physics of Modern Materials," 1991, pp. 408-409, 2 nd Ed, Chapman and					
LOT	A32	Hall, a division of Routledge, Chapman and Hall, Inc., 29 West 35 th Street, NY, NY 10001-2291.	-				
	A33	KRUG et al., "Fine Patterning of Thin Sol-Gel Films," Journal of Non-Crystalline Solids, 1992, pp. 447-450,					
		vol. 147 & 148.					
	A34	Kotachi et al., "Si-Containing Positive Resist for ArF Laser Lithography," J. PhotopolymerSci. Tevhnol. 8(4) 615-622, 1995.	_				
	A35	Krauss et al., "Fabrication of Nanodevices Using Sub-25nm Imprint Lithography," Appl. Phys. Lett 67(21), 3114-3116, 1995.	_				
	A36	CHOU et al., "Imprint of Sub-25 nm Vias and Trenches in Polymers," Applied Physics Letters, November 20, 1995, pp. 3114-3116, vol. 67(21).	_				
	A37	CHOU et al., "Imprint Lithography with 25-Nanometer Resolution," Science, Apr. 5, 1996, pp. 85-87, vol. 272.	_				
-	A38	HAISMA et al., "Mold-Assisted Nanolithography: A Process for Reliable Pattern Replication," Journal of Vacuum Science and Technology, Nov/Dec 1996, pp. 4124-4128, vol. B 14(6).	_				
	A39	CHOU et al., "Imprint Lithography with Sub-10nm Feature Size and High Throughput," Microelectronic Engineering, 1997, pp. 237-240, vol. 35.					
	A40	SCHEER et al., "Problems of the Nanoimprinting Technique for Nanometer Scale Pattern Definition," Journal of Vacuum Science and Technology, Nov/Dec 1998, pp. 3917-3921, vol. B 16(6).	_				
V	A41	XIA et al., "Soft Lithography," Annu. Rev. Mater. Sci., 1998, pp. 153-184, vol. 28.	_				
LBT	A42	XIA et al., "Soft Lithography," Agnew. Chem. Int. Ed., 1998, pp. 550-575, vol. 37.					

Examiner Signature	LEO B.	TENTONI	Date Considered	08/02/2005
Olgitatoro	L		Considered	

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Unique citation designation number. ²Applicant is to place a check mark here if English language Translation is attached.

Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Substitu	ite for form 1449B	/PTO		Complete if Known		
				Application Number	10/645,306	
INF	ORMATION	I DISC	LOSURE	Filing Date	08/21/2003	
STA	ATEMENT E	3Y AP	PLICANT	First Named Inventor	Choi et al.	
				Group Art Unit	4763 TENTONE 1732	
	(use as many sh	eets as ned	cessary)	Examiner Name	Unassigned TENTONI	
Sheet	4	of	5	Attorney Docket Number	P86/MII-46-28-03	

OTHER PRI	OR ART - I	NON PATENT LITERATURE DOCUMENTS					
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.					
A43		WU et al., "Large Area High Density Quantized Magnetic Disks Fabricated Using Nanoimprint Lithography,"					
LBT	A43	Journal of Vacuum Science and Technology, Nov/Dec 1998, pp. 3825-3829, vol. B 16(6).					
	A44	COLBURN. et al., "Step and Flash Imprint Lithography: A New Approach to High-Resolution Patterning",					
		Proc. of SPIE, 1999, pp. 379-389, vol. 3676.					
	A45	CHOU et al., "Lithographically-Induced Self Assembly of Periodic Polymer Micropillar Arrays," Journal of					
	743	Vacuum Science and Technology, Nov/Dec 1999, pp. 3197-3202, vol. B 17(6).					
		RUCHHOEFT et al., "Patterning Curved Surfaces: Template Generation by Ion Beam Proximity Lithography					
	A46	and Relief Transfer by Step and Flash Imprint Lithography," Journal of Vacuum Science and Technology,	_				
		1999, pp. 2965-2982, vol. 17.					
	1 447	CHOI et al., "Design of Orientation Stages for Step and Flash Imprint Lithography," Precision Engineering,					
	A47	Journal of the International Societies for Precision Engineering and Nanotechnology, 2001, pp. 192-199, vol. 25.					
	A48	CHOU, "Nanoimprint Lithography and Lithographically Induced Self-Assembly," MRS Bulletin, July 2001, pp. 512-517.	_				
	A49	MIRKIN et al., "Emerging Methods for Micro-and Nanofabrication," MRS Bulletin, July 2001, pp. 506-509					
		CHOI et al., "High Precision Orientation Alignment and Gap Control Stages for Imprint Lithography					
	A50	Processes," U.S. Patent Application 09/698,317, Filed with USPTO on October 27, 2000.					
	1.54	BENDER M. et al., "Fabrication of Nanostructures using a UV-based Imprint Technique," Microelectronic					
	A51	Engineering, pp 223-236, 2000.	-				
		SREENIVASAN et al., "High-Resolution Overlay Alignment Methods and Systems for Imprint Lithography,"					
\downarrow	A52	U.S. Patent Application 09/907,512, Filed with USPTO on July 16, 2001.	-				
		CHOI et al., "Method and System of Automatic Fluid Dispensing for Imprint Lithography Processes," U.S.					
LBT	A53	Patent Application 09/908,455, Filed with USPTO on July 17, 2001.	-				

_						
Fya	miner				Date	
			0	マグルアクルドア	Date	100/00/000
Sim	nature		D .	IENIUNIL	Considered	108/02/2005
Sigi	TIBLUTE	_~	<u> </u>		Considered	100/04/40

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Unique citation designation number. ²Applicant is to place a check mark here if English language Translation is attached.

Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
d to a collection of information unless it displays a valid OMB control number.

Und	er the Paperwork Reduction	Act of 19	95, no persons are require	d to respond to a collection of information	n unless it displays a valid OMB control number		
Substi	tute for form 1449B/P	то	_	Complete if Known			
				Application Number	10/645,306		
INF	ORMATION	DIS	CLOSURE	Filing Date	08/21/2003		
ST	ATEMENT B	Y AF	PPLICANT	First Named Inventor	Choi et al.		
				Group Art Unit	1763 1732		
	(use as many shee	ts as n	ecessary)	Examiner Name	Unassigned TENTONI		
Sheet	5	of	5	Attorney Docket Number	P86/MIL46-28 03		

OTHER PRIC	OR ART - I	NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
		CHOI et al., "Methods for High-Precision Gap and Orientation Sensing Between a Transparent Template	Γ
LBT	A54	and Substrate for Imprint Lithography,* U.S. Patent Application 09/920,341, Filed with USPTO on August 1, 2001.	_
	A55	Nguyen, A. Q., "Asymmetric Fluid-Structure Dynamics in Nanoscale Imprint Lithography," University of Texas at Austin, August 2001.	
- 	_	BAILEY et al., "Template for Room Temperature Low Pressure Micro- and Nano-Imprint Lithography," U.S.	
	A56	Patent Application 09/976,681, Filed with USPTO on October 12, 2001.	-
	1	WATTS et al., "Low Viscosity High Resolution Patterning Material," U.S. Patent Application 10/178,947,	\vdash
	A57	Filed with USPTO on June 24, 2002.	_
	1	WATTS et al., "System and Method for Dispensing Liquids," U.S. Patent Application 10/191,749, Filed with	
	A58	USPTO July 9, 2002.	-
	1	SREENIVASAN et al., "Method and System for Imprint Lithography Using an Electric Field," U.S. Patent	\vdash
	A59	Application 10/194,410, Filed with USPTO July 11, 2002.	-
	 	SREENIVASAN et al., "Step and Repeat Imprint Lithography Systems," U.S. Patent Application	┢
LBT	A60	10/194,414, Filed with USPTO July 11, 2002.	-
			_

Examiner Signature	LEO	В,	TENTONI	Date Considered	08/02/2005

^{*}EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231

¹Unique citation designation number. ²Applicant is to place a check mark here if English language Translation is attached.